

We claim:

1 1. A machining center comprising:
2 a machine base provided with rails;
3 a workpiece support proximal to said machine base and
4 adapted to hold at least one workpiece to be machined;
5 a workpiece holder on said machine base movable on said
6 rails on said base between a pick-up position in which a
7 workpiece is acquired by said holder from said workpiece support,
8 to a machining station in which a workpiece on said holder is
9 machined and back to a position in which said workpiece holder
10 can release a machined workpiece onto said workpiece support,
11 said holder retaining said workpiece between said rails during
12 movement between said positions and said machining station;
13 at least two machining devices on said base at said
14 machining station having respective machining tools rotatable
15 about respective axes on the respective device;
16 drives for relatively displacing said holder and said
17 machining devices to bring said workpiece into machining
18 relationship with said tools at respective machining positions of
19 each of said devices at the machining station; and
20 respective tool-change positions for each of said
21 machining devices spaced from the respective machining position
22 in a direction parallel to a respective rotation axis of the
23 respective device whereby each of said devices is shiftabl

24 parallel to the respective rotation axis from the respective
25 machining position to the respective tool-change position.

1 2. The machining center defined in claim 1 wherein
2 said workpiece holder comprises a workpiece spindle provided with
3 a jaw chuck adapted top grip said workpiece.

1 3. The machining center defined in claim 2 wherein
2 said workpiece spindle is mounted on a cross slide displaceable
3 on said rails and on a guide perpendicular to said rails.

1 4. The machining center defined in claim 3 wherein
2 said spindle is swingable about an axis on said holder
3 perpendicular to said rails and to said guide.

1 5. The machining center defined in claim 3 wherein
2 said workpiece holder is provided with a drive imparting a feed
3 movement to said workpiece for machining thereof by a respective
4 one of said tools at said machining station.

1 6. The machining center defined in claim 1 wherein
2 each of said machining devices is provided with a drive capable
3 of presenting the respective tool at the respective machining
4 position and retracting the respective tool into a respective
5 tool-change position.

1 7. The machining center defined in claim 6, further
2 comprising a support element carrying respective guides for said
3 machining devices enabling the displacement of said machining
4 devices between the respective machining position and the
5 respective tool-change position.

1 8. The machining center defined in claim 7 wherein
2 said support element is rigid with or one piece with said base.

1 9. The machining center defined in claim 8 wherein the
2 guides for said machining devices are disposed outside said
3 machining station.

1 10. The machining center defined in claim 1, further
2 comprising a shield preventing contaminants from said machining
3 station from passing into said tool-change positions.

1 11. The machining center defined in claim 1 wherein
2 said shield is a dirt deflector located between the machining and
3 tool-change positions.

1 12. The machining center defined in claim 7 wherein
2 said machining devices are located on opposite sides of said
3 support element.

1 13. The machining center defined in claim 1, further
2 comprising at least one tool magazine accessible at said tool-
3 change positions for supplying replacement tools to said tool-
4 change positions.

1 14. The machining center defined in claim 13 wherein
2 each of said machining devices is provided with a respective tool
3 magazine.

1 15. The machining center defined in claim 13, further
2 comprising a respective tool changer at each of said tool-change
3 positions for removing a tool from a magazine and inserting it
4 into the respective machining device.

1 16. The machining center defined in claim 1, further
2 comprising a transport device for advancing workpieces in
3 succession into said pickup position and carrying a machined
4 workpiece away from said pickup position, whereby each workpiece
5 is picked up and dropped off by said workpiece holder at the same
6 place.